Sub A3

WHAT IS CLAIMED IS:

1. A system for transmitting and receiving data formatted in IEEE 1394 standard between devices using a same IEEE 1394 broadcast channel, comprising:

a CPU interfaced to a bus;

a first 1394 interface connected to the bus via first physical and link layers; and

a second 1394 interface connected to the bus via second physical and link layers,

wherein the CPU is configured for 1) receiving data from the bus, attaching a header to the received data, and retransmitting the received data with the prefixed header onto the bus; and 2) receiving data prefixed with a header, interpreting the header to identify which of the first or second 1394 interfaces should receive the data, and transmitting the data over the bus to the identified 1394 interface.

2. A system according to Claim 1, further comprising a first digital video camera having a fixed broadcast channel and which transmits/receives digital video data isochronously through the first 1394 interface and a second digital video camera having the same fixed broadcast channel as the first digital video camera and which transmits/receives digital video data isochronously through the second 1394 interface.

3. A system according to Claim 1, wherein the header identifies the type of data, the data recipient and amount of data.

4. A system according to Claim 2, wherein the digital video data output from either the first or second video camera includes 1394 header

Sub A3

information, data, and header and data check information, and wherein the link layer for each respective 1394 interface removes the 1394 header and header and data check information prior to transmitting the data over the bus to the CPU.

5. A system according to Claim 2, further comprising a network controller for accessing a local area network and for transmitting data with the header, wherein the network controller receives the data and the header, attaches a network header to the data and repackages the data with the header and network header into a network data packet and, upon receiving access to the local area network, transmits the network packet over the local area network to a receiving side network controller based on the attached network header.

6. A system according to Claim 5, wherein received network data packets are unpackaged, network headers are removed, and the header is interpreted to identify which 1394 interface should receive the data.

7. A system according to Claim 6, wherein the link layer of the identified 1394 interface attaches 1394 header and data information to the data and transmits the data through the physical layer to the identified 1394 interface in an isochronous manner and where, in the case the identified 1394 interface connects to the first digital video camera, the identified 1394 interface outputs the data in the isochronous manner to the first digital video camera and, in the case the identified 1394 interface connects to the second digital video camera, the identified 1394 interface

outputs the data in the isochronous manner to the second digital video camera.

8. A system according to Claim 7, further comprising a monitor for displaying analog video data output from either the first or second digital video camera.

9. A system according to Claim 1, further comprising an interface to a local area network.

10. A system according to Claim 1, wherein the bus is a PCI bus.

11. A system for transmitting and receiving data formatted in IEEE 1394 standard between devices using a same IEEE 1394 broadcast channel, comprising:

a CPU interfaced to a bus;

a first 1394 interface connected to the bus via first physical and link layers; and

a second 1394 interface connected to the bus via second physical and link layers,

wherein the CPU is configured for receiving data over the bus and routing the data to either the first or second 1394 interface based on the received data.

12. A system according to Claim 11, further comprising a first digital video camera having a fixed broadcast channel and which transmits/receives digital video data isochronously through the first 1394 interface and a second digital video camera having the same fixed broadcast channel as the first digital video camera and which transmits/receives digital video data isochronously through the second 1394 interface.

13. A system according to Claim 12, wherein the digital video data output from either the first or second video camera includes 1394 header information, data, and header and data check information and wherein the link layer for each respective 1394 interface removes the 1394 header and header data check information prior to transmitting the data over the bus to the CPU.

14. A system according to Claim 12, further comprising a network controller for accessing a local area network and for transmitting data with the header, wherein the network controller receives the data and the header, attaches a network header to the data and repackages the data with the header and network header into a network data packet and, upon receiving access to the local area network, transmits the network packet over the local area network to a receiving side network controller based on the attached network header.

15. A system according to Claim 14, wherein received network data packets are unpackaged, network headers are removed, and the header is interpreted to identify which 1394 interface should receive the data.

16. A system according to Claim 15, wherein the link layer of the identified 1394 interface attaches 1394 header and data information to the data and transmits the data through the physical layer to the identified 1394 interface in an isochronous manner and where, in the case the identified 1394 interface connects to the first digital video camera, the identified 1394 interface outputs the data isochronously to the first digital

video camera and, in the case the identified 1394 interface connects to the second digital video camera, the identified 1394 interface outputs the data isochronously to the second digital video camera.

17. A system according to Claim 16, further comprising a monitor for displaying digital video data output from either the first or second digital video camera.

18. A system according to Claim 11, further comprising an interface to a local area network.

19. A system according to Claim 11, wherein the bus is a PCI bus.

20. A network video conferencing system having at least one digital video camera for transmitting digital video data and at least one display device for receiving digital video data at a local side, and having at least one digital video camera for transmitting digital video data and at least one display device for receiving digital video data at a remote side, all digital cameras and display devices at both the local side and the remote side using the same IEEE 1394 broadcast channel, comprising:

a local CPU interfaced to a local data bus;

a first 1394 interface connected to a local digital video camera and connected to the local data bus via first physical and link layers;

a second 1394 interface connected to a local display device and connected to the local data bus via second physical and link layers;

a network interface connected to the local data bus and to a local area network;

a remote network interface connected to a remote data bus and the local area network;

a remote CPU interfaced to the remote data bus;

a third 1394 interface connected to a remote digital video camera and connected to the remote data bus via third physical and link layers; and

a fourth 1394 interface connected to a remote display device and connected to the remote data bus via fourth physical and link layers,

wherein the local CPU is configured to 1) receive data output by the local digital camera from the first 1394 interface over the bus, attach a header to the received data, and retransmit the received data over the bus to the network interface which transmits the data over the local area network to the remote network interface; and 2) receive data with an attached header over the local data bus from the network interface, interpret the header to identify which of the first or second 1394 interfaces should receive the data, and transmit the data over the local data bus to the identified 1394 interface which outputs the data to the local display device, and

wherein the remote CPU is configured to 1) receive data off the remote data bus which has been transmitted over the local area network and which has a header attached thereto, interpret the header to identify which of the third or fourth 1394 interfaces should receive the data, and transmit the data over the remote data bus to the identified 1394 interface for outputting to the remote display device; and 2) receive data from the remote data bus which has been output from the remote digital video

camera via the third or fourth 1394 interface, attach a header to the received data, and retransmit the received data with the attached header onto the remote data bus which outputs the data with the header to the remote network interface for output to the local area network.

21. A network video conferencing system according to Claim 20, wherein the first digital video camera transmits video data to the fourth digital video camera at the remote side and the second digital video camera receives video data from the third digital video camera at the remote side.

22. A network video conferencing system according to Claim 20, wherein the local area network is a Gigabit Ethernet network.

23. A network video conferencing system according to Claim 20, wherein the local and remote data busses are PCI busses.

Sub A5

24. A system for transmitting and receiving data formatted in IEEE 1394 standard between devices using a same IEEE 1394 broadcast channel, comprising:

a CPU interfaced to a bus;

a first 1394 interface connected to the bus via first physical and link layers; and

a second 1394 interface connected to the bus via second physical and link layer,

wherein the CPU is configured for 1) receiving data from the bus, attaching a header and a subheader to the received data, and retransmitting the received data with the attached header and subheader onto the bus; and 2) receiving data with an attached header and subheader, interpreting the

sub A5

header and subheader to identify which of the first or second 1394 interfaces should receive the data and which broadcast channel in the identified 1394 interface should receive the data, and transmitting the data over the bus to the identified 1394 interface.

25. A system according to Claim 24, further comprising a first digital video camera having a fixed broadcast channel and which transmits/receives digital video data isochronously through the first 1394 interface and a second digital video camera having the same fixed broadcast channel as the first digital video camera and which transmits/receives digital video data isochronously through the second 1394 interface.

26. A system according to Claim 25, wherein the digital video data output from either the first or second video camera includes 1394 header information, data, and header and data check information and wherein the link layer for each respective 1394 interface removes the 1394 header and header and data check information prior to transmitting the data over the bus to the CPU.

27. A system according to Claim 25, further comprising a network controller for accessing a local area network and for transmitting data with the header and subheader, wherein the network controller receives the data and the header and subheader, attaches a network header to the data and repackages the data with the header and subheader and network header into a network data packet and, upon receiving access to the local area network, transmits the network packet over the local

area network to a receiving side network controller based on the attached network header.

28. A system according to Claim 27, wherein received network data packets are unpackaged, network headers are removed, and the header and subheader are interpreted to identify which 1394 interface and channel in that 1394 interface should receive the data.

29. A system according to Claim 28, wherein the link layer of the identified 1394 interface attaches 1394 header and data information to the data and transmits the data through the physical layer to the identified 1394 interface in an isochronous manner and where, in the case the identified 1394 interface connects to the first digital video camera, the identified 1394 interface outputs the data in the isochronous manner to the first digital video camera and, in the case the identified 1394 interface connects to the second digital video camera, the identified 1394 interface outputs the data in the isochronous manner to the second digital video camera.

30. A system according to Claim 29, further comprising a monitor for displaying analog video data output from either the first or second digital video camera.

31. A system according to Claim 24, further comprising an interface to a local area network.

32. A system according to Claim 24, wherein the bus is a PCI bus.

Sub A6

33. For use in a system for transmitting and receiving data formatted in IEEE 1394 standard between devices using the same IEEE 1394 broadcast channel, the system having a CPU interfaced to a bus, a first 1394 interface connected to the bus via first physical and link layers, and a second 1394 interface connected to the bus via second physical and link layers, computer process steps for controlling the system, comprising:

a step of receiving data from the bus;

a step of attaching a header to the received data;

a step of retransmitting the received data with the attached header onto the bus;

a step of receiving data with an attached header;

a step of interpreting the header to identify which of the first or second 1394 interfaces should receive the data; and

a step of transmitting the data over the bus to the identified 1394 interface.

34. For use in a system for transmitting and receiving data formatted in IEEE 1394 standard between devices using the same IEEE 1394 broadcast channel, the system having a CPU interfaced to a bus, a first 1394 interface connected to the bus via first physical and link layers, and a second 1394 interface connected to the bus via second physical and link layers, computer process steps for controlling the system, comprising:

a step of receiving data over the bus; and

a step of routing the data to either the first or second 1394 interface based on the received data.

Sub A6

35. For use in a system for transmitting and receiving data formatted in IEEE 1394 standard between devices using the same IEEE 1394 broadcast channel, the system having a CPU interfaced to a bus, a first 1394 interface connected to the bus via first physical and link layers, and a second 1394 interface connected to the bus via second physical and link layers, computer process steps for controlling the system, comprising:

a step of receiving data from the bus;

a step of attaching a header and a subheader to the received data;

a step of retransmitting the received data with the header and subheader onto the bus;

a step of receiving data with an attached header and an attached subheader;

a step of interpreting the header and subheader to identify which of the first or second 1394 interfaces should receive the data and which broadcast channel in the identified 1394 interface should receive the data; and

a step of transmitting the data over the bus to the identified 1394 interface.

36. A system for transmitting and receiving data formatted in IEEE 1394 standard between devices using a same IEEE 1394 broadcast channel, comprising:

a controlling means interfaced to a communication means;

a first 1394 interface means connected to the communication means via first physical and link layers; and

a second 1394 interface means connected to the communication means via second physical and link layers,

Sub A6

wherein the controlling means is configured for 1) receiving data from the communication means, attaching a header to the received data, and retransmitting the received data with the attached header onto the communication means; and 2) receiving data with an attached header, interpreting the header to identify which of the first or second 1394 interface means should receive the data, and transmitting the data over the communication means to the identified 1394 interface.

37. A system for transmitting and receiving data formatted in IEEE 1394 standard between devices using a same IEEE 1394 broadcast channel, comprising:

a controlling means interfaced to a communication means;

a first 1394 interface means connected to the communication means via first physical and link layers; and

a second 1394 interface means connected to the communication means via second physical and link layers,

wherein the controlling means is configured for receiving data over the communication means and routing the data to either the first or second 1394 interface means based on the received data.

38. A system for transmitting and receiving data formatted in IEEE 1394 standard between devices using a same IEEE 1394 broadcast channel, comprising:

a controlling means interfaced to a communication means;

a first 1394 interface means connected to the communication means via first physical and link layers; and

Sub A6

a second 1394 interface means connected to the communication means via second physical and link layers,

wherein the controlling means is configured for 1) receiving data from the communication means, attaching a header and a subheader to the received data, and retransmitting the received data with the prefixed header and subheader onto the communication means; and 2) receiving data with an attached header and an attached subheader, interpreting the header and subheader to identify which of the first or second 1394 interface means should receive the data and which broadcast channel in the identified 1394 interface should receive the data, and transmitting the data over the communication means to the identified 1394 interface.